SCIENCE

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*THE SOUTHPORT MEETING OF THE BRITISH ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE.**

IT is just twenty years since the British Association first met at Southport, a comparatively short interval between two successive visits of this peripatetic body to one place. Although Southport in 1883 was a much smaller place than it is now, it was yet able to accommodate in addition to its crowd of summer visitors 2,710 members and associates of the British Association. Since then Southport has considerably extended its bounds and greatly increased its accommodation for holiday-makers, so that if the attendance at the meeting which begins on September 9 be increased in proportion, the second Southport meeting ought to reach the *maximum*. The previous one was above the average, and after all, it is doubtful whether it will be much exceeded on the present occasion. And yet Southport itself has many more summer attractions than the great cities which form the usual places of meeting of the association. Its fine sands, its esplanade and its numerous other open-air attractions may tend, should the weather be favorable, to diminish the attendance at the sectional meetings, especially among that considerable body who, without disrespect, may be called the camp followers

* From the London *Times*.

of the army of science—a section which at the same time performs a most useful function, as without such a body the receipts at the previous meeting would not have amounted to the considerable sum of £3,369, enabling the association to allot grants for scientific investigation amounting to £1,083. What may be called the outside attractions of the second Southport meeting will be many. The local committee have exerted themselves to the utmost to make the meeting in this respect a thorough success, and it is to be hoped that the meteorologists, who are to have a special conference in connection with the meeting, will take measures to provide the kind of weather which they may be sure their hosts are praying for.

The scientific attractions of the neighborhood will be fully dealt with in the handbook which is in preparation. Ample provision has been made for the usual entertainments in the way of receptions and excursions. A reception by the mayor of Southport in the municipal buildings is announced for Thursday evening, September 10, and on the following afternoon there will be a garden party, also given by the mayor, in Hesketh Park. Saturday will, as usual, be a free day so far as the work of the sections is concerned. Arrangements have been made for a number of excursions to places of interest in the surrounding country, including Windermere, and also for visits to Chester and Manchester. This last should prove especially attractive to members who wish to combine solid instruction with their pleasure, as those taking part in the excursion will be conducted over the works of the British Westinghouse Electrical and Manufacturing company. The company has kindly promised to provide luncheon for the visitors, and opportunity will be afforded to the party of viewing the new technical school, the John Rylands Library and the Chetham Hospital. On either Monday or Tuesday a garden party will be given by Sir George Pilkington, who is this year one of the vice-presidents of the meeting, and on the evening of the latter day the local committee has arranged to entertain the association at a *conversazione* in the municipal buildings. Interest in the sectional meetings has, it is to be feared, generally begun to wane by the concluding day of the gathering, and accordingly there have been arranged for the afternoon of Wednesday certain excursions which, though unofficial, will probably attract a good many of the members. These are to Messrs. Lever's well-known model village, Port Sunlight, the Diamond Match Works at Seaforth, and the Cunard steamship *Lucania*. Members will also be given on the following day the opportunity of visiting various industrial enterprises of interest, including works for the manufacture of watches, a Lancashire industry which, after falling on evil days, has been revived with a considerable measure of success.

The accommodation for the sectional work of the meeting seems to be ample. The opening meeting on the evening of September 9, when the president, Sir Norman Lockyer, will deliver his inaugural address, will be held in the opera house, while the three evening lectures will be delivered in the Cambridge-hall. The first of these, on Friday evening, will be by Dr. Robert Munroe, on 'Man as an Artist and Sportsman in the Paleolithic Period.' The Monday evening discourse will be by Dr. Arthur Rowe, on 'The Old Chalk Sea and some of its Teachings,' while the lecture to working men on Saturday evening will be by Dr. J. S. Flett, who will give an account of his observations on the recent volcanic eruptions in the West Indies.

One of the most noteworthy features in connection with the first Southport meeting was the inaugural address of its president, the late Professor Cayley. Professor Cayley was one of the most profound mathematicians that ever lived. He was so absorbed in his subject that even on such an occasion he could not wrench himself outside its limits. It was a masterly discourse, dealing with exceedingly abstruse problems in the highest mathematics, and was probably not fully understood by a score of those to whom it was audible. Sir Norman Lockyer is, like his predecessor at Southport, also a specialist, but a specialist in more than one department. His career as a scientific worker has been associated for considerably more than half a century with the spectroscopical observation of the heavenly bodies and related subjects, with brilliant results both in the way of actual discoveries and of hypotheses. Sir Norman Lockyer has for an equally long period devoted his energies to what we may venture to call another speciality, the endowment of research, which he has done much to promote, and it is probably with one department of the latter subject that he will deal in his presidential address at Southport. He will insist, we believe, on the paramount influence of science and scientific research on national progress, and will endeavor to show at some length how largely our national salvation depends on the adequate endowment of our universities. Sir Norman Lockyer's address is sure to be both emphatic and brilliant.

So far as the ordinary work of the various sections is concerned, to judge from the particulars with which the sectional presidents and recorders have kindly favored us, it promises to be quite up to the average, both in quality and quantity. While, as a whole, it will be conducted on the usual lines, and while much of it will appeal only to specialists, in certain of the sections subjects of wide interest will be discussed.

The president of Section A (mathematical and physical science) will be Mr. C. V. Boys, one of the most brilliant, original and unconventional of our younger physicists. No particulars are yet available as to the subject of the address which he proposes to deliver, but his discourse is certain to be interesting and worthy of the occasion. As the International Meteorological Congress, under the presidency of Professor Mascart of Paris, is meeting at Southport at the same time as the British Association, the department of Section A devoted to meteorology and astronomy will this year be particularly strong in meteorological papers. Contributions have been promised by several of the distinguished foreign members of the congress, including Hildebrandson, Paulsen and Panta; and Dr. W. Lockyer will give an account of his researches on simultaneous solar and terrestrial phenomena. The physical portion of the section will be occupied mainly in discussing three questions of importance at the present moment—namely, the nature of the emanations from radio-active substances, the method of dealing with non-reversible processes in the general theory of heat and the use of vectorial methods in physical work. Professor Rutherford, of Montreal, will open the first with an account of the experiments which have led him to the conclusion that the emanations from radium are material; Mr. Swinburne will open the second and the third will be introduced by Professor Henrici. It is hoped that it will be possible at the meeting to come to definite conclusions on these three questions.

Professor W. Noel Hartley will preside over Section B (chemistry). He proposes,

in his presidential address, to give a brief account of twenty-five years' work in spectroscopy, applied to the investigation of the composition and constitution of terrestrial matter, both organic and inorganic. He will review the present position of spectroscopical investigation, chiefly in relation to the theory of chemistry, indicating where it may be usefully and profitably extended. The trend of such work at the present time is towards results of a very interesting character. As regards the general work of the section, the number of papers sent in is considerable, and they deal with a great variety of subjects. A paper on 'Dynamic Isomerism,' by Dr. T. M. Lowry, will be one of the reports which have during recent years been a feature of the proceedings of the section. It will consist of a *résumé* of the whole subject of the dynamic isomerism or tautomerism, which has lately attracted much attention, and a fruitful discussion should follow. Dr. A. W. Crossley will contribute a paper on 'Hydro-aromatic Compounds' forming a supplement to the valuable report which he presented at the Belfast meeting last year. It will give the results of the recent investigations undertaken by Dr. Crossley and others on the turpentines, camphors and other hydro-aromatic substances. A paper by Professor W. J. Pope (recorder) and Mr. J. Hübner will show that the luster produced on cotton yarn by merurigation—or steeping, whilst under tension, in caustic soda—is due to a simultaneous shrinkage, swelling and untwisting of the fiber whilst in a gelatinous state. An interesting accompaniment of this paper will be a series of photo-micrographs taken in natural colors. A discussion on the general subject of combustion will be opened by Dr. W. A. Bone with a paper on 'The Combustion of Methane and Ethane,' whilst a somewhat unusual feature in the program will be papers in French by Count Arnaud de Gramont, entitled 'Sur le Spectre du Silicium' and 'Sur les Procédés de Photographie Spectrale Applicable à la Pratique des Laboratories de Chimie.' These are but a few items in the program, other contributions including papers on 'Fluorescence,' as related to the constitution of organic substances, by Dr. J. T. Hewitt; 'Essential Oils,' by Dr. O. Silberrad; 'The Action of Diastase on the Starch Granules of Raw and Malted Barley' and 'The Action of Malt Diastase on Potato Starch,' by Mr. A. R. Ling and Mr. B. F. Davis; a contribution to the 'Constitution of the Disaccharides,' by Professor Purdie and Dr. J. C. Irvine and a 'Method of Separating Cobalt and Nickel and the Volumetric Determination of Cobalt,' by Mr. R. L. Taylor. Altogether there is every reason to hope that Section B will this year have a more prosperous meeting than it had last.

The main aim of Professor W. W. Watts, secretary of the Geological Society, in his presidential address to Section C (geology), will be to show the importance and uses of geology in practical life. He will advocate its adoption as a subject of ordinary education, because, in the first place, its study both exercises the observing faculties and encourages the making of hypotheses for the testing and verifying of which there is ample material. Moreover, its pursuit leads to an open-air life in contrast to the confinement in laboratories and museums imposed on the students of other branches of science; for the aim of all geological teaching should be the making of the field geologist; even specialists in paleontology and petrology should be field men as well. Then, again, he will contend that a knowledge of some of the main facts established by geology, such as the extension of time, the antiquity of

man and the evolution of climate and geography, ought fairly to be regarded as part of the stock in trade of the man of average education. Passing to the practical uses of such training and knowledge, he will point out, first, how the eye is trained to appreciate a country and the use of this in reading and mapping topographical features; secondly, the use of the conclusions of geology as a foundation for geographical knowledge; and, thirdly, the importance of geological knowledge in connection with all economic questions relating to mineral wealth. Unfortunately for Section C, the Southport meeting clashes with the International Geological Congress at Vienna, at which several of the leading British geologists are to be present. A number of papers have been arranged for, however, and though none appears to be of very outstanding importance, a fairly full program may be expected. One of the most important contributions, perhaps, will be a paper by Mr. G. W. Lamplugh on the 'Disturbance of Junction-Beds from Differential Shrinkage during Consolidation,' while an account by Mr. J. J. H. Teall of 'The Recent Work of the Geological Survey,' should be of interest. Dr. Smith Woodward has promised a paper which is sure to be of value. Mr. H. W. Monckton (recorder) will lay before the section some notes on 'Sarsen Stones,' Mr. C. C. Moote will contribute a paper on the 'Porosity of Rocks,' Mr. J. G. Goodchild will treat of the 'Origin of Eruptive Rocks,' while Mr. J. Lomas will discuss 'Some Glacial Lakes in Switzerland.' A number of papers dealing with the geology, or particular features of the geology, of various localities have also been arranged for, including an account by Mr. J. Lomas of the geology of the country around Southport. Considerable interest will attach to the first report of the committee appointed at Belfast to investigate the fauna and flora of the Trias of the British Isles. The committee have this year confined themselves to the study of footprints, and Mr. Beasley furnishes the bulk of the report.

In past years, it will be remembered, zoology and physiology have each been accorded a separate section at the meetings of the British Association. Last year, however, it was decided, in view of the close relation between the two subjects, to combine the two sections, and accordingly at Southport the physiologists will meet with the zoologists in Section D. The president of the united section is Professor Sydney J. Hickson. In the first part of his address he will consider the present position of the endowments and other encouragements for original research in zoological science in this country, and will point out the need there is for further cooperation and consultation on the part of working zoologists in matters affecting the common interests of the science. The second part of the address will be devoted to a consideration of the general problem of the influence of environment in the production of variation in animals. He will take the group of Cœlenterata for special consideration, and point out the bearing that the facts of variation in this group have upon the general question. The remaining work of the section seems likely to provide a very full program. No account of the physiological contributions is yet available, but the papers on zoological subjects alone constitute a fairly long list. A feature of the proceedings following the president's address will, it is hoped, be a discussion on fertilization, in which Professor Bretland Farmer, Dr. M. D. Hill, Professor E. B. Wilson, of Columbia University, and others, are expected to take part. As is the case in most of the sec-

tions, many of the contributions deal with highly technical subjects, which the specialist alone can fully appreciate; but mention may be made of a paper on 'Comparison of Terrestrial and Marine Fauna,' by Professor W. C. McIntosh, and of another on 'Corals,' by Professor J. E. Duerdon, of the University of North Carolina.

The subject of the address which Captain Ettrick W. Creak, C.B., R.N., proposes to deliver to Section E (geography), in his capacity of president of the section, is the connection between geography and terrestrial magnetism. He will point out that terrestrial magnetism is a subject of vital importance to navigation, and of growing interest to science, and after referring to the magnetic surveys of the globe which have in the past been carried out by land and sea, will direct attention to the vast secular changes which are occurring in the earth's magnetism, and insist on the necessity for keeping our magnetic charts up to date. He will then indicate the vast land areas still unvisited by the magnetic observer, in which travelers might find a field for useful work, and will have something to say about the instruments which should be employed. He will also refer to the far more extensive areas of the globe covered by water, in which practically no magnetic observations have been made for many years past, mainly owing to the lack of suitable vessels. The scientific nature of the presidential address is fully reflected in the program of the general work of the section. In the list of papers, records of journeys of exploration are conspicuous by their absence. Colonel Manifold, indeed, will discuss 'The Routes to the Yangtsze Valley,' and Mr. J. P. Thomson, founder and secretary of the Queensland branch of the Royal Geographical Society of Australia, has promised to give an account of the geography of Queensland, where he has traveled widely. It is also hoped that Lieutenant Shackleton will be able to contribute a paper on 'The National Antarctic Expedition,' in the first year's work of which he took so prominent a part. But the great majority of papers deal with the more purely scientific branches of geography. An important subject down for discussion by Colonel F. Bailey is the 'Denudation of Mountains and its Remedy.' More or less akin to this is 'The Afforestation of Water-works Catchment Areas,' a subject which will be dealt with by Mr. J. J. Parry, special attention being paid to the case of Liverpool. A paper of much practical interest to explorers should be that on 'Improved Methods of Survey for Travelers,' by Mr. E. A. Reeves, the Royal Geographical Society's map curator and instructor, while equally interesting and instructive in another direction will be Mr. E. D. Morel's account of the 'Economic Development of West Africa,' a topical subject of special importance. Other papers to be read before the section are the 'Geographical Distribution of Disease and Disease Carriers,' by Dr. L. Sambon; 'The Melting of Ice in Relation to Ocean Currents,' by Professors Pettersson and Sandström; 'The Importance of Echology to Geography,' illustrated by slides, by Mr. O. Darbishire; 'The Physical Geography of the Pennine Chain,' by Mr. B. F. Kendall; 'A Botanical Survey of Westmoreland and Cumberland,' by Mr. F. J. Lewis; 'Glareanus, a Sixteenth Century Geographer, and His Manuscript Maps,' by Mr. E. Heawood; and 'The Nomenclature of British Mountain Systems,' by Dr. H. R. Mill. A feature of much interest in the proceedings of the section should be the joint meeting which has been arranged with Section L (educational science), for the purpose of discussing the teaching of geography. Mr.

H. J. Mackinder, reader in geography at the University of Oxford, will open the discussion, and he will be followed by several others who have devoted special attention to this important branch of school work.

In view of the vital questions now at issue with regard to the fiscal policy of the empire, an unusually large attendance may be looked for at the meetings of Section F (economic science and statistics). So far as can be judged from the preliminary list of papers, those who follow the proceedings of the section will have no cause to grudge the time so spent. The subjects on which contributions have been promised are at once of wide general interest and of commanding importance in the life of the nation. As might be expected, not a few of the contributions are connected with the problems now immediately before the country, but the papers to be read and discussed are by no means confined to this subject. As a government official, Mr. E. W. Brabrook, C.B., who is this year president of the section, has naturally steered clear of the much debated question of the day. He has, however, chosen as the subject of his presidential address a topic always attractive, and one that closely affects the national welfare—namely, 'Thrift.' In virtue of his position as chief registrar of the Friendly Societies' Registry, Mr. Brabrook is peculiarly well qualified to speak with authority on this subject, and a highly-instructive address may be looked for. The great accumulation of funds in friendly and other societies and in savings banks will be noted, the principle upon which the legislature has hitherto dealt with these bodies will be defended and its satisfactory results pointed out. Incidentally a number of matters interesting to those who are concerned with provident institutions will be touched upon and discussed, and the general conclusion drawn will be favorable to these bodies. In the general program of the sectional proceedings, a complete day has been set aside for the consideration of the fiscal questions which Mr. Chamberlain has proposed for discussion. Dr. E. Cannan will discourse on 'The Shibboleths of Free Trade,' Mr. A. L. Bowley, the recorder of the section, will discuss 'The Application of Statistics to Economic Arguments,' making reference to methods of criticism, Mr. H. O. Meredith will relate the 'History of Retaliation,' and Mr. F. Bradshaw will give an account of 'The Commercial Relations between Canada and the United Kingdom,' an historical résumé from early times to the present day. It is also hoped that a day will be devoted to a discussion on 'Our National Income, and How to Spend it.' Sir Robert Giffen is expected to open the discussion. A subject that is attracting a good deal of attention just now is to be dealt with by Mr. Bosanquet, who will read a paper on 'Physical Deterioration and the Poverty Line,' criticizing the statistics advanced on the subject. Different aspects of taxation will be discussed in two or three contributions. 'Sinking Funds in Municipal Enterprise' will form the subject of a paper by Mr. S. H. Turner, of Glasgow University, who will insist on the necessity of distinguishing between sinking funds and depreciation in law and practice. Dr. B. Ginsburg will discuss the growth of rates, and a paper on a kindred subject will be contributed by Mr. J. G. Chorlton. Mr. Lees Smith, of Ruskin Hall, Oxford, has promised a paper on 'Karl Marx's Theory of Value'; and the work of the section will also include the consideration of the final report of the Committee on Legislation affecting Women's Labor. The report will show that information has been obtained on sev-

eral important questions, and that the acts so far passed by Parliament have been the cause of many benefits and of very little visible inconvenience.

The president of Section G (engineering) is Mr. Charles Hawksley. No information as to the subject of his address is available, but the program of the general work of the section shows that the engineers are likely to have a very interesting meeting. Apart from the papers to be read, the various excursions to important industrial works in the neighborhood, to which reference has already been made, should prove specially attractive to members of this section. An interesting contribution will be that by Lieutenant-Colonel Crompton, R.E., C.B., on 'The Problem of Modern Street Traffic.' This paper is intended to open a discussion in which municipal engineers, tramway engineers, police officials, automobilists, and others are invited to take part. A particular aspect of the general problem of vehicular traffic will be dealt with by Mr. J. Clarkson, in a paper on 'Steam Propulsion on Roads.' Mr. W. F. Goodrich will have much that is instructive to say on the subject of 'Refuse Destructors and Power Production,' and, among other contributions, will be papers by Mr. Bell, on 'Oil Fuel'; Mr. Woodhouse, on 'The Newcastle Power Works'; Mr. T. Parry, on 'The Water Supply of South-West Lancashire'; Dr. Campbell Brown, on 'The Growth of Organisms in Water Pipes,' and Mr. B. Hopkinson, on 'The Paralleling of Alternators.'

The address of Professor J. Symington, of Queen's College, Belfast, who is this year president of Section H (anthropology) will deal mainly with the significance of variations in cranial form, and will criticize the view recently revived by Professor G. Schwalbe that the fossil Neanderthal skull cap belonged to a species of *Homo* different from recent man. It will also consider the relation between the external and internal forms of the cranial wall. The papers accepted in physical anthropology include a study of the skulls from Round Barrows in Yorkshire, by Dr. W. Wright; papers on skulls from the Malay Peninsula, by Mr. N. Annandale, and on the physical character of the Andamanese, by Dr. Garsin; a note on Grattan's craniometrical methods, by Professor Symington; and important reports on Dr. C. E. Myers' work on the rank and file of the Egyptian Army, on Dr. W. H. R. Rivers' researches among the Todas, and on Mr. Duckworth's investigations among the ancient and modern populations of Crete. The committee on anthropometric methods has a valuable report to present, and that on the teaching of anthropology will probably report *ad interim*. Archeology will be unusually well represented. Mr. Arthur Evans, Mr. J. L. Myres and Mr. R. C. Bosanquet will offer reports on this year's excavations in Crete, Mr. J. Garstang and Mr. Currelly on recent work in Egypt, Mr. G. Clinch on 'A Surrey Monument illustrative of Certain Points in Stonehenge,' Mr. Annandale on 'Stone Implements from Iceland,' Dr. C. S. Myers on 'The Ruins of Kharga in the Great Oasis,' Mr. T. Ashly on 'Roman Work at Caerwent,' and Mr. Garstang on 'Ribchester,' while the usual report on the Silchester excavations may be expected to lead to some discussion. Professor Ridgeway will read a paper on the 'Origin of Jewelry.' General ethnography (with the exception of Dr. Rivers' work on the Todas) and folklore and comparative religion (with the exception of a paper by Mr. W. Crooke on 'Islam in Modern India') are as yet poorly represented, but this de-

fect will probably be remedied before the meeting.

Section K (botany) will meet under the presidency of Mr. A. C. Seward, whose address will be devoted to the subject of fossil plants. After referring to the importance of paleobotanical investigations, as affording evidence bearing on the interrelationships of existing classes and families of plants, the greater part of the address will deal with the leading characteristics and geographical distribution of the older floras of the world. The geographical distribution of extinct plants has received less attention than it deserves, but in spite of the meager character of the available data the subject is well worthy of consideration. The general facies of the vegetation of the Devonian, Carboniferous, Breccian, Triassic and Jurassic periods will be described, prominence being given to such facts as throw light on the methods of plant evolution during the Paleozoic and Mesozoic eras. The main object of the address, however, will be to draw attention to the conclusions which may be looked for as the result of a critical study of the geographical distribution of the floras of the past. As regards the general work of the section, Mr. W. Bateson and Miss E. R. Saunders will read papers on the new discoveries in heredity and will deal with the results of some cross-breeding experiments with plants, maintaining the view that these have arisen from a dicotyledonous ancestor by the union of its two seed leaves. Miss Ethel Sargant will open a discussion on the evolution of the monocotyledons, and Mr. C. C. Hurst will give an account of some recent experiments in the hybridization of orchids. Professor J. B. Farmer will lecture on epiphytes, Messrs. A. G. Tansley and F. F. Blackman will give an account of important recent advances in our knowledge of the green algæ, Dr. O. V. Darbishire will read a paper on the sandhill and saltmarsh vegetation of Southport, Miss Sargant and Miss Robertson on the seedlings of some grasses, Mr. Harold Wager (recorder of the section) on the staminal hairs of *Tradescantia,* and Professor T. Johnson on a willow canker. The report of the joint committee of Sections K and L on the teaching of botany in schools will be presented, as also reports on the investigation of the Cyanophyceæ and on the respiration of plants.

Section L (educational science) will this year meet for the third time, and so well has it justified its existence that it may now be regarded as an established institution. The president of the section is Sir William de Wiveleslie Abney, K.C.B., principal assistant secretary of the Secondary Branch of the Board of Education, from whom an instructive address may be expected. Following the course pursued at Glasgow and Belfast—a course which might, perhaps, usefully be adopted, in a measure at least, by some of the other sections—the organizing committee has decided to confine the discussions to a few subjects of wide general interest and importance. The first two days of the sectional proceedings will be devoted to an organized discussion on school curricula, based on a series of short papers of which copies will be distributed before the meeting. Papers have been promised by (amongst others) Miss Burstall and Messrs. M. E. Sadler, J. L. Paton, W. L. Fletcher (Liverpool Institute), John Adams and T. E. Page. There will be two main branches to the discussion, one relating to the character of the curriculum suitable for primary (preparatory) schools, the other to the curriculum suitable for

secondary schools. It is hoped that each of these subjects will be discussed very thoroughly. Naturally the latter, being the larger subject, will be the more fruitful in matters for consideration. The general questions which will be raised will be: What subjects, if any, all children should at first study in common; whether the training should not in all cases necessarily include literary instruction and practical instruction (science, drawing, manual and physical training, etc.); and how far up in the schools both these should be carried. Then will be considered at what stage, and to what extent, divergence from the general preparatory courses should take place, and the best curricula will be discussed for schools preparing for (1) commercial professions, (2) domestic professions, (3) engineering and applied science professions and (4) literary professions. Finally the relation in such schools between literary and practical branches of instruction will be dealt with. Besides discussing these important questions, the section will consider the reports of various committees on subjects deserving of careful attention. Four reports will be presented, relating to the conditions of health essential to the carrying on of the work of instruction in schools; the teaching of natural science in elementary schools; the influence exercised by universities and examining bodies on secondary school curricula, and also of the schools on university requirements; and the teaching of botany in schools. This last, as has already been stated, is the report of a joint committee of Sections K and L. Reference, too, has already been made to the meeting which Section L is to hold jointly with Section E for the purpose of discussing the teaching of geography.

HIGH SCHOOL CHEMISTRY IN ITS RELATION TO THE WORK OF A COLLEGE COURSE.[*]

The object in discussing a subject of such latitude as the one assigned me I assume to be to suggest questions, invite criticism and point out defects rather than merits. Two distinct questions claim our attention in discussing the relation of high school chemistry to the work of a college course.

1. Who ought to decide what is the most suitable course for high schools, and how shall such decision be arrived at?

2. What is the most notable defect in the present arrangement and what is the remedy?

I shall also assume that the young man preparing for college should study chemistry by the same methods as the one who is to be a farmer or a merchant. Whatever method is good enough for one is none too good for the other. As the elements of reading or arithmetic are taught alike to the future mechanic and elocutionist or accountant, so differentiation in chemistry should begin with the higher branches only. The question is to find the best system for teaching the science. That question, however, being a matter of individual opinion, is subordinate to the one I purpose to discuss. Who shall be the arbiter and how shall decision be reached?

The methods of yesterday are not the same as those of to-day, and to-morrow will bring its own differences. A generation ago chemistry was taught by recitation and lecture work. Now the laboratory supplements and in some cases supplants these. All new methods tend to extremes; hence those in vogue to-day are not necessarily nor even probably better in every respect than those of

[*] Read before the Science Department of the National Educational Association, Boston, July 10, 1903.